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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/827,350	04/06/2001	Arie C. Scheiberlich	P 0279263 P-0177.010-US	2993

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EXAMINER

NGUYEN, HUNG

ART UNIT PAPER NUMBER

2851

DATE MAILED: 11/29/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/827,350

Applicant(s)

SCHEIBERLICH ET AL.

Examiner

Hung Henry V Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 April 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on 06 April 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: "M₁ and M₂" (see fig. 1). A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 2 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As to claim 2, the breadth, scope and meaning of "the setpoint" is not clearly defined and is ambiguous. The recitation of "wherein the filtered position signal forms a setpoint for said servo system" is vague and indefinite.

With respect to claims 6 and 9, the recitations of "said position signal forms a setpoint for said inner control loop" are ambiguous and not clearly understood.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

5. Claims 1-15 are rejected under 35 U.S.C. 102(e) as being anticipated by Miyachi (U.S. Pat. 6,400,456).

As best the claimed subject matters are understood (see rejection under 35 U.S.C. 112, second paragraph, *supra*). Claims are anticipated by references.

With regard to claims 1-3, 12-13, Miyachi discloses a scanning exposure apparatus comprising all basic features of the instant claims including: a light source (1) for providing a projection beam of radiation; a reticle stage (9) for supporting a reticle (7) having a predetermined pattern formed thereon; a substrate stage (17,19-20) for supporting a substrate (15); a projection optical system (PL) for transferring the pattern formed on the reticle onto the substrate; a level sensor (AF) for measuring and generating a position signal regarding a deviation between the image plane of the imaging system and the substrate plane; a servo control

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system (13) responsive to the position signal and controlling the movement of the reticle and the substrate to a desired position (see col.1, lines 55-61) and a filter disposed between the level sensor and the servo system for filtering the position signal and wherein the filter is a low-pass filter arranged to pass components of the position signal having a spatial frequency lower than a predetermined spatial frequency (see col.4, lines 5-23; col.5, lines 60-65, or claim 2 of Miyachi).

As to claim 4, Miyachi teaches the cutoff spatial frequencies of the low-pass filter are set to values inversely proportional the width of the exposure region (16) in the scanning direction and the height (H_0) in the non-scanning direction (see col.14, lines 8-43, and lines 62 through col.15 line 15, col.16, lines 60-67).

As to claims 5-11, Miyachi further teaches the low-pass filter is adapted to reduce the noise components from the input focus signals to condition the signal components and a position sensor comprising an interferometric device (23) for detecting a position of the at least mask stage and the substrate stage (see col.16, lines 32-34) and the output of the sensor being supplied to the servo control system having inner control loop for processing and controlling the position of the mask stage and the substrate stage (see col.11, line 27 through col.12, line 49).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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7. Claims 1-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van der Werf (U.S.Pat.5,191,200) in view of Miyachi (U.S.Pat. 6,400,456).

With respect to claims 1-15, van der Werf (fig.1) discloses an exposure apparatus for transferring a pattern formed on a mask onto a photosensitive substrate comprising substantially all of the limitations of the instant claims including a level sensor for measuring at least one of a perpendicular position and shift about at least one parallel axis of a surface of the reticle and the substrate and producing a position signal indicate thereof, and a servo system responsive to the positional signal for controlling the movement of the reticle stage and wafer stage (see fig.1). Van de Werf lacks does not expressly disclose a low-pass filter for filtering the position signal. As discussed, Miyachi teaches a low-pass filter disposed between a level sensor and a servo system of an exposure apparatus for filtering the position signal and passing components of the position signal having a spatial frequency lower than a predetermined spatial frequency (see col.4, lines 5-23; col.5, lines 60-65, or claim 2 of Miyachi). It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the teachings of Van de Werf and Miyachi to obtain the invention as specified in claims 1-15. It would have been obvious to a skilled artisan to employ a low-pass filter between the level sensor and the servo system in the device of Van der Werf, for at least the purpose of filtering the high spatial frequency generated by unwanted movements of the stage whereby the accuracy positioning is obtained.

Prior Art Made of Record

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

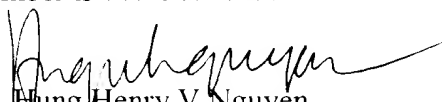
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Imai et al (U.S.Pat. 5,502,311), Wakamoto et al (U.S.Pat. 5,461,237) and Makinouchi (U.S.Pat. 5,777,721) discloses exposure apparatus, each of which comprises substantially all elements as recited in the claims of the instant invention.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung Henry V Nguyen whose telephone number is 703-305-6462. The examiner can normally be reached on Monday-Friday (First Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Russ Adams can be reached on 703-308-2847.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4900.


Hung Henry V Nguyen
Examiner
Art Unit 2851

hvn
November 21, 2002